

What is claimed is:

1. An attachment device that is expandable from a first state to a second state for securing an endovascular apparatus to an interior wall of a lumen, the device comprising:
 - a plurality of telescoping arms, the arms being operatively connected to one another so as
- 5 to form a perimeter of variable length; and
 - a fixation component operatively coupled to the plurality of arms to anchor the attachment device to the wall of a lumen when the attachment device is expanded to the second state.
2. The attachment device of Claim 1, wherein the longitudinal axes of the arms are co-
 - 10 planar in the first state.
3. The attachment device of Claim 1, wherein the arms are connected to one another in an M configuration.
4. The attachment device of Claim 1, wherein the ends of adjacent arms are operatively connected for pivotable movement.
- 15 5. The attachment device of Claim 1, wherein each telescoping arm comprises incrementally-sized segments that are slideably received within one another.
6. The attachment device of Claim 5, wherein the segments are tubular.
7. The attachment device of Claim 5, wherein each of the plurality of arms further comprises a one-way latch that allows the arm to extend but not to contract.
- 20 8. The attachment device of Claim 7, wherein the one-way latch comprises at least one groove associated with a first segment of a telescoping arm and at least one tooth associated with a second, adjacent segment of the telescoping arm, the at least one groove and at least one tooth being aligned for engagement with one another as the first segment slides relative to the second segment.

9. The attachment device of Claim 1, wherein the fixation component is located at the juncture of adjacent telescoping arms.
10. The attachment device of Claim 1, wherein the arms are made of stainless steel.
11. The attachment device of Claim 1, wherein the arms are made of a nickel-titanium alloy.
- 5 12. The attachment device of Claim 1, wherein the attachment device when in the first state possesses a first profile that is sufficiently small to permit it to be percutaneously inserted via catheter into either of a patient's femoral arteries.
13. The attachment device of Claim 1, wherein at least one of the plurality of telescoping arms includes an aperture for releasing an adhesive contained within the at least one arm.
- 10 14. An attachment device that is expandable from a first state to a second state for securing an endovascular apparatus to an interior wall of a lumen, the device comprising:
 - an upper expandable device and a lower expandable device, each expandable device comprising
 - 15 a plurality of telescoping arms, the arms being operatively connected to one another so as to form a perimeter of variable length; and
 - a fixation component operatively coupled to the plurality of arms to anchor the expandable device to the wall of a lumen when the attachment device is expanded to the second state;

wherein the upper expandable device is coupled to the lower expandable device such that

20 the fixation component of the upper expandable device is angularly offset from the fixation component of the lower expandable device.
15. The attachment device of Claim 14, wherein the upper expandable device is coupled to the lower expandable device by an o-ring seal.
16. An endovascular apparatus comprising:

a tubular sleeve having a cranial end and a caudal end, the tubular sleeve suitable for forming a flow path for by-passing an aneurysm or vascular blockage; and

first and second attachment devices attached to the cranial and caudal ends of the tubular sleeve, respectively, to hold the sleeve open and secure the sleeve to a wall of a lumen, the first and second attachment devices being expandable from a first state to a second state and each comprising

a plurality of telescoping arms, the arms being operatively connected to one another so as to form a perimeter of variable length; and

10 a fixation component operatively coupled to the plurality of arms to anchor the attachment device to a wall of a lumen when the attachment device is expanded to the second state.

17. The endovascular apparatus of Claim 16, further comprising a third attachment device coupled to the first attachment device by a plurality of support columns and positioned above the first attachment device such that the first attachment device is positioned between the second and 15 third attachment devices, the third attachment device comprising

a plurality of telescoping arms, the arms being operatively connected to one another so as to form a perimeter of variable length; and

20 a fixation component operatively coupled to the plurality of arms to anchor the attachment device to a wall of a lumen when the attachment device is expanded to the second state.

18. The endovascular apparatus of Claim 17, wherein the support columns are telescoping support columns of variable length.

19. The endovascular apparatus of Claim 18, wherein the support columns comprise a plurality of incrementally-sized segments that are slideably received within one another.

25 20. The endovascular apparatus of Claim 19, wherein at least one of the telescoping support columns includes an aperture for releasing an adhesive contained within the support column.

21. The endovascular apparatus of Claim 17, wherein the third attachment device is positioned above a patient's renal arteries and the first attachment device is positioned below the patient's renal arteries.

22. The endovascular apparatus of Claim 16, wherein the first and second attachment devices
5 are coupled together by a plurality of support columns.

23. The endovascular apparatus of Claim 16, further comprising at least one spring for exerting a force on at least one of the first and second attachment devices to prevent said attachment device from collapsing from the second state to the first state.

24. The endovascular apparatus of Claim 16, further comprising at least one telescoping arm
10 in an M configuration for exerting a force on at least one of the first and second attachment devices to prevent said attachment device from collapsing from the second state to the first state.

25. An endovascular apparatus comprising:

15 a tubular sleeve having a cranial end, a first caudal branch, and a second caudal branch;
and

first, second, and third expandable attachment devices attached to the cranial end, the first caudal branch, and the second caudal branch of the tubular sleeve, respectively, to hold the sleeve open and secure the sleeve to a wall of a lumen, the first, second, and third attachment devices being expandable from a first state to a second state and each comprising

20 a plurality of telescoping arms, the arms being operatively connected to one another so as to form a perimeter of variable length; and

a fixation component operatively coupled to the plurality of arms to anchor the attachment device to a wall of a lumen when the attachment device is expanded to the second state.

26. The endovascular apparatus of Claim 25, further comprising a fourth attachment device
25 coupled to the first attachment device by a plurality of support columns and positioned above the first attachment device such that the first attachment device is positioned between the fourth

attachment device on one hand and the second and third attachment devices on the other hand, the fourth attachment device comprising

a plurality of telescoping arms, the arms being operatively connected to one another so as to form a perimeter of variable length; and

5 a fixation component operatively coupled to the plurality of arms to anchor the attachment device to a wall of a lumen when the attachment device is expanded to the second state.

27. The endovascular apparatus of Claim 25, further comprising a fourth attachment device attached to the cranial end of the tubular sleeve below the first attachment device but above a

10 junction of the first caudal branch and the second caudal branch such that the fourth attachment device is positioned between the first attachment device on the one hand and the second and third attachment devices on the other hand, the fourth attachment device comprising

a plurality of telescoping arms, the arms being operatively connected to one another so as to form a perimeter of variable length; and

15 a fixation component operatively coupled to the plurality of arms to anchor the attachment device to a wall of a lumen when the attachment device is expanded to the second state.

28. An attachment device that is expandable from a first state to a second state for securing an endovascular apparatus to an interior wall of a lumen, the device comprising:

20 at least one telescoping arm comprising a plurality of segments; and

a fixation component operatively coupled to the at least one telescoping arm to anchor the attachment device to the wall of a lumen.

29. The attachment device of Claim 28, further comprising a plurality of telescoping arms coupled together in an M configuration.

25 30. An endovascular apparatus comprising:

a tubular sleeve having a cranial end and a caudal end; and

first and second attachment devices attached to the cranial and caudal ends of the tubular sleeve, respectively, to hold the sleeve open and secure the sleeve to a wall of a lumen, the first and second attachment devices being expandable from a first state to a second state and each
5 comprising

at least one telescoping arm comprising a plurality of segments; and

a fixation component operatively coupled to the at least one telescoping arm to anchor the attachment device to the wall of a lumen.

31. An endovascular device for percutaneous deployment of an endovascular apparatus, the

10 device comprising:

a telescoping sheath including a plurality of incrementally-sized segments that are slideably received within one another;

an introducer slideably received within the sheath; and

an inflatable balloon slideably received within the sheath.

15